

Flowers. But this is not an identical twin by any means; the greater emphasis in Barth's book is on the insects although the flowers are given a good deal of attention. The illustrations in both books are magnificent (in color and black and white plates and appropriate line drawings) and the texts are accurate and readable in both books. They are synergistic.

Insects and Flowers was first published (in 1982) in German by Friedrich Barth, who is Professor of Zoology in Frankfurt. He was a graduate student at UCLA after gaining his first degree at the University of Munich. The book was translated by M. Biederman-Thorson, who is also a biologist as well as a professional translator of scientific works. The result is a book that reads as if it were written originally in English. There is an introductory chapter, followed by 6 chapters on pollination mechanisms and pollinators, followed, in turn, by 4 chapters on the collecting of pollen and nectar. Then there are 18 chapters on the senses and behaviors of insects (with most space, naturally, being devoted to bees). A concluding chapter explores the co-evolution that has produced the efficient "orthodox" pollination systems as well as the bizarre stories of the aroids and Orchidaceae and their relations with insects. Barth shows that he means business by *starting* with the complicated interaction between figs and fig-wasps, but the going gets easier later on. His book will be useful to professional and amateur biologists for it is simply written, factually convincing, and well-backed by references. These references include German works that are not usually considered in books written in English. His explanation of the structure of insect mouth-parts is a marvel of clarity, which will be appreciated by non-entomologists.

In his evolutionary considerations, Barth is an unashamed Darwinian "phyletic gradualist" (as opposed to being a "punctuated equilibrium" supporter), and he has the advantage of material that fits the gradualist view of insect/plant co-evolution. His discussion of the evolution of the social habit among bees, and the almost incredible senses and communication patterns that these insects show, is considered in relation to the flowers and their phenology, thus making this book appropriate reading for botanists!

There are very few misstatements of botanical fact even though the author is a zoologist. Thus, reference is made to "nectar guides" in some taxa that do not produce this liquid, but these are scarcely visible blemishes on a text that is well-informed and most informative. Princeton University Press has brought us a book that will be a leader in its field.—H. G. BAKER, University of California, Berkeley.

California Riparian Systems: Ecology, Conservation, and Productive Management. Edited by RICHARD E. WARNER and KATHLEEN M. HENDRIX. University of California Press, Berkeley. 1984. xxix + 1035 pp. \$57.50, \$19.95 paper. ISBN-529-05034-7 and -05035-5 (pbk.).

This massive, catholic, inclusive, wide-ranging book is the record of, and a monument to, the California Riparian Systems Conference held at the University of California, Davis, 17–19 Sep 1981. The more than 250 authors are outstandingly expert, dedicated, responsible, involved. One hundred twenty-eight papers are printed in 22 sections: Biogeography and change; Structure, status and trends; Hydrology related to structure, function and protection; Aquatic riparian interactions; Riparian/upland interactions; Economic and social values; legal framework; Classification, inventory, and monitoring; National and regional trends in use; Restoration; Water diversion project conflicts; Levees; Bird populations; Coastal zone; Desert systems; Sustained yield production; Cultural, recreational and aesthetic values; Integrated approaches to management—protection; State versus local control; The Rivers and Harbors Act of 1899 and conservation; Non-avian wildlife; and Private ownership. This sectional classification is far from absolute. Very many papers burst their bounds to become even more interesting. However, a 39 page, double column index will facilitate reference. Notably it does not include authors' names.

The book is obviously more than a mine of information for California's botanists. Even on the subject of riparian ecosystems it ranges not only throughout California but from Oregon to the Great Basin and the desert Southwest, from the mountains to the sea coast. This vast area is mostly arid, but riparian ecosystems are obviously uniquely mesic in the summer-dry, lowland landscapes of the American West. Judging from the productivity studies available from Soviet work on similar riparian systems in central Asia (tugai), our western riparian plant communities may have been the most productive natural vegetation in the West.

Several papers, quite arbitrarily selected, supply intelligible botanical data, contain traces of the field work on which they are based, use more or less standard methods, compare their results with similar studies, produce an inductive rather than a deductive classification, and employ few or no "*Salix* spp." (Strahan, Whitlow, and Bahre; McBride and Strahan; Laymon, Shanfield, Warner; etc.). Others, which are simply intensely interesting, on the Carmel River, structure of vegetation, Mono Lake, and *Prosopis glandulosa* productivity, deserve mention (Kondolf and Curry; Stone, Cavallaro, and Stromberg; Stine, Gaines, and Vorster; Nilsen, Rundel, and Shariff; etc.). Holstein's biogeographical paper is a model, with adequate paleobotanical and ecological data, including good distribution maps. Other readers will certainly have their own highlights.

An only slightly slimmer European book is an interesting supplement and contrast to the Californian volume (Gehu, J.-M., ed., 1984, *La vegetation des forets alluviales*, Colloques Phytosociologiques 9 in Strasbourg, 1980. J. Cramer, Vaduz. xiv + 744 pp., tables). Riparian vegetation from Austria, Hungary, Rumania, and Czechoslovakia to Spain, and from Italy to W. Germany was discussed by 94 attendees in 46 papers. There were field trips in addition to the presentations. Languages are French, German, English, and Italian. About 1/2 of the book's thickness is tables of the stands of vegetation studied, the data manipulated and discussed. Braun-Blanquet's methods of studying vegetation and its ecology were used. A classification of riparian vegetation has resulted and is generally agreed upon. Where numerical methods of analysis were employed, the results are also often illustrated by tables of stands. The numerical data can thus be tested by the reader's ecological experience with the species in the field, greenhouse, or laboratory.

A stand's position in an ordination or in a classification of vegetation is due to its species composition. Which species? The unique value of Braun-Blanquet's method of studying vegetation is that the result is a table of individual species occurrences in particular stands. Much can be done with such data; no interpretation of vegetation and particularly no interpretation of the ecology of vegetation is of value without such data.

If the reader can tear himself away from this volume, including a paper that used good topographic maps of riparian areas of the upper Rhine from 1838, 1852, 1872, and the present or from another that from a population of 1420 stands containing 1223 species made a selection of 328 riparian stands containing 331 species, then a volume by B. M. Mirkin et al. (1980) (*Riparian vegetation of the Mongolian Peoples' Republic*, Biological resources and natural conditions of the MPR, vol. 13. 284 pp. Nauka, Leningrad) should be of interest. It covers in considerable detail the vegetation of a dozen Mongolian rivers from their origins in the high mountains to their disappearance in the Gobi deserts or across the Soviet border. This group took data on 3500 stands and made 5000 plant collections, so we evidently still have some purely botanical work to do on California's riparian ecosystems!—JACK MAJOR, Botany Department, University of California, Davis.

Forest Succession and Stand Development Research in the Northwest. Proceedings of the Symposium held 26 March 1981, at Corvallis, Oregon. Edited by JOSEPH E. MEANS. Forest Research Laboratory, Oregon State University, Corvallis 97331. 1982. \$6.00.

In creating his revised tolerance table for American forest trees, Baker (1949) made a significant observation. Noting that a number of the "outstanding men in the field